FINAL
PRELIMINARY ASSESSMENT

for

THE PACIFIC ACTIVITIES LTD., SITE

DAVENPORT, IOWA

Site: Pacific Activities
ID # IAD005481197
Break: 1.5
Other: 9-20-99

Technical Direction Document: S07-9802-010
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Site Assessment and Cost Recovery Program

Prepared By:

Ecology and Environment, Inc.
Superfund Technical Assessment and Response Team

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APPROVED BY:

Jolene S. Patterson — 9/20/99
Jolene S. Patterson, E & E/START Project Manager — Date

Patty S. Roberts — 9/20/99
Patty S. Roberts, CHMM, E & E/START Site Assessment Manager — Date

Robert C. Overfelt — 9-20-99
Robert C. Overfelt, CPG, E & E/START PM — Date

ecology and environment, inc.
International Specialists in the Environment
Cloverleaf Building 3, 6405 Metcalf, Overland Park, Kansas 66202
Tel: (913) 432-9961, Fax: (913) 432-0670

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1.0 INTRODUCTION

The Ecology and Environment, Inc. (E & E), Superfund Technical Assessment and Response Team (START) was tasked by the United States Environmental Protection Agency (EPA) Site Assessment and Cost Recovery (SACR) program to conduct a Preliminary Assessment (PA) for the Pacific Activities Limited (PAL) site in Davenport, Iowa. This PA was performed under Technical Direction Document (TDD) S07-9802-010. The site's CERCLIS ID# is IAD005481197.

The PAL site is located in a primarily industrial area adjacent to the Mississippi River in Davenport, Iowa. In 1987, a now defunct lessee of the site, Alloy Metal Products, Inc. (AMPI), contacted EPA about possible hazardous waste generation at the site as a result of their nickel recovery operation. In 1989, PAL purchased the site. A Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) conducted in 1991 documented 27 solid waste management units (SWMUs) at the site that required action under RCRA, and subsequent soil sampling confirmed the wide-spread presence of metals contamination in on-site soils. In 1996, a closure plan was completed by PAL (which inherited the cleanup of the site subsequent to the bankruptcy of AMPI) and approved by EPA. The potentially responsible party (PRP)-lead closure activities primarily addressed contaminated soils above a depth of 1.0-foot below ground surface (BGS) at the site including the removal and stabilization (on site) of the most highly contaminated soils, and the coverage of some soil areas on site with a geotextile fabric and compacted crushed stone. Samples collected in 1993 from existing monitoring wells on site showed the presence of lead at one location, and chlorinated volatile organic compounds (VOCs) in two wells.

The purpose of this investigation was to collect sufficient information concerning conditions at the PAL site to evaluate the threat posed to human health and the environment, and to determine the need for additional EPA action. Activities performed by START to prepare the PA included a review of available file information and collection of additional desktop data.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE LOCATION

The PAL site is located at 626 Schmidt Road in Davenport, Scott County, Iowa. Davenport, Iowa, is a community with a population of 95,333 people (USDC, 1990). The geographic coordinates of the center of the site are latitude 41°32'30" N and longitude 90°37'30" W (USGS, 1991). The site is located on the Davenport East, Iowa, 7.5 minute Topographic Quadrangle Map within the SE ¼ of the NE ¼ of the SE ¼ of Section 33 and the SW ¼ of the NW ¼ of the SW ¼ of section 34, Township 78 North, Range 3 East (USGS, 1991). Figure 2-1 illustrates the site location.

2.2 SITE DESCRIPTION

The 10.3-acre PAL site is located in an industrial area along the Mississippi River in Davenport, Iowa. Howard Steel, a new-steel warehouse, is located west of the site, and Alter Trading Corporation, a scrap-metal recycling facility is located to the south. Commercial buildings along Rockingham Road border the site to the north; and east of the site are Schmidt Road, SOO Railroad tracks, and Rich Battery and Metal Company (a scrap-metal facility). The site is a former metal fabrication and recycling facility operated by AMPI. Former structures at the site used by AMPI and previous site occupants included a power plant, locomotive foundry, machine shops, forges, furnaces, conveyors, offices and a laboratory. PAL purchased the site in March 1989, and as of 1996 only limited commercial activity has taken place on the property. Figure 2-2 illustrates the current and historical features of the site.

Subsequent to the closure of the site, five buildings and a stabilized soil berm remain on the property, which is secured with a fence and locked gate. Most of the remaining land surface at the site is overlain by crushed stone or concrete, with some smaller areas of exposed soil.

2.3 OPERATIONAL HISTORY AND WASTE CHARACTERISTICS

Davenport-Bessler Corporation operated a diesel locomotive manufacturing facility at the site from 1938 to 1954. A.G.S Associates, an Iowa general partnership, owned the site from 1954 to 1964. During part of that time, the site was leased to Alter Company, an Iowa corporation. Alter Company operated a scrap metal processing and alloy metal production/fabrication business during the period of the lease. In

1964, Sherman Industries, Inc., purchased the site and leased the property to Alloy Metal Products, Inc. (AMPI), (DAHL, 1993).

AMPI conducted operations at the facility until July 1987. Various grades of nickel alloy scraps were purchased in the form of grindings, turnings, solids, borings, catalyst, flue dusts, and sludges. These scraps were then melted in electric arc furnaces and poured into 35-50 pound containers and sold as a nickel additive. Flue dust from these scraps was collected in an emission control dust collection system connected to the furnace. The emission control dust was recycled through a melting process in the electric arc furnace to recover the various elements of economic value (BVWSTC, 1991). A filter fabric baghouse was located on the property to collect baghouse waste dust, which was generated as a result of induction furnaces used in nickel alloy processing. The baghouse waste dust was stored at several on-site locations. The rate at which the dust accumulated on site property, and when the dust began accumulating are unknown. The dust was stored for a period of at least 18 months following the bankruptcy of AMPI in July 1987. It is estimated that nearly 1 million pounds of dust were being stored onsite, according to an EPA compliance inspection. All baghouse dust, in addition to pieces of scrap metal, cardboard, wood, and spent tires were transported off site for recycling or disposal in 30 shipments from June 1988 to December 1989.

The city of Davenport recycling program utilized the southeast portion of the site as a recycling center, with limited, controlled public access possible until March 1995, when the recycling facility was closed and public access was eliminated. A fence and a gate separated the recycling center from the remaining property.

2.4 PAST INVESTIGATIONS

The EPA was initially notified of the PAL site in January 1987, when an attorney representing AMPI contacted EPA regarding potential hazardous waste generation at the site. AMPI submitted Notification of Hazardous Waste Activity to EPA in March 1987, and by July 1987, had ceased all operations and filed for Chapter 7 bankruptcy.

In October 1988, seven shallow monitoring wells were installed by Alter Trading Corporation, Inc., as part of a hydrogeological field investigation conducted at the site for AMPI. A May 1995 Removal Action Plan prepared by the current responsible party (PAL) indicated that no elevated concentrations of metals had been observed in ground water samples collected from these wells (Vesar, 1996).

The purchase of the site in 1989 left PAL responsible for closing the RCRA-regulated units at the facility and implementing a corrective action program to address potential releases from the facility. An October 1993 Site Cleanup Report (SCR) detailed the investigation and cleanup of two areas of gasoline-contaminated soil (DAHL, 1993). Two underground storage tanks (USTs) were removed from the site in October 1990, and approximately 90 cubic yards of contaminated soil were excavated in the area of the USTs and disposed of at the Scott County landfill. Further characterization of the gasoline-contaminated soil area was conducted in July 1992 and October 1993. During those activities, additional soil boring were completed and four monitoring wells were installed to characterize both soil and ground water contamination, respectively. An additional 10 cubic yards of soil was removed for disposal from one of the UST pits. The entire area of contaminated soil above the action level of 100 mg/kg for total organic hydrocarbons (TOH) was not removed because this area extended beneath the foundation of a adjacent building. The SCR report concluded that based on the results of the soil sampling, the area of gasoline-contaminated soil was limited to soils directly under and adjacent to the UST pits primarily at concentrations below the 100 mg/kg TOH action level. Analysis of ground water samples by the OA-1 method did not detect any gasoline components in the ground water (DAHL, 1993).

A RCRA Facility Assessment (RFA) was prepared in July 1991, which identified 27 SWMUs requiring corrective action under RCRA. These SWMUs included: baghouse dust piles inside and outside of several buildings, PCB capacitor area, skids of slag, drums of unknown liquids and solids, drums of sodium cyanide and hydrofluoric acid, carboys of corrosive material, a baghouse building and a waste disposal area. The RFA noted that PAL had conducted a cleanup of selected areas on site after purchasing the property, and submitted a plan for closure of the baghouse dust. EPA determined that the closure plan (including cleanup activities) did not adequately satisfy RCRA requirements, and recommended it be revised per United States Corp of Engineers (USACE) comments before resubmittal.

As part of a partial closure plan submitted by PAL in January 1991, and approved by EPA in March 1992, four areas of baghouse dust accumulated by AMPI were removed off site for secondary recovery of metals. In addition, containerized material staged on site and in one of the five remaining buildings on site was properly disposed of off site. Two of the five remaining buildings (a warehouse and processing building) were decontaminated by scraping the floor surfaces, removing and disposing of wooden floor materials where present, and pressure washing walls and ceilings (Versar, 1995). However, no soil sampling or removal was conducted at that time.

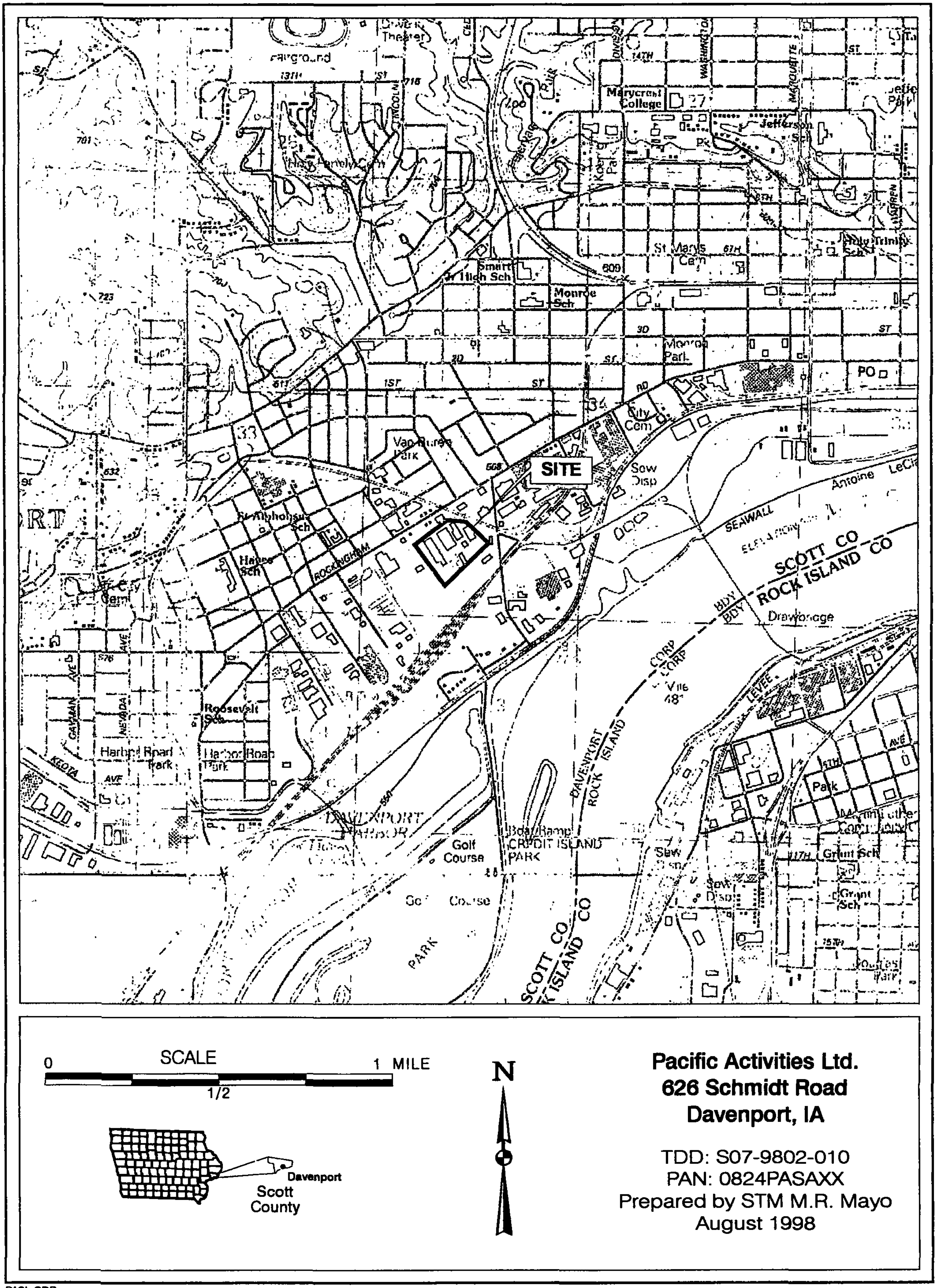
In October 1993, a followup investigation to the 1991 RFA was conducted by EPA-contractors Metcalf & Eddy and PRC, which culminated in a February 1994 Revised Sampling Visit Trip Report and Data Compilation (Metcalf & Eddy, 1994). That investigation included extensive soil and ground water (from existing on-site monitoring wells) sampling to determine if those media had been impacted as a result of industrial activities conducted on site. The majority of the soil borings were completed to a depth of approximately 4 feet BGS; however selected borings were completed to nearly 7 feet BGS. In general, it was concluded that most of the borings terminated in fill material, which was recognized by the predominance of cinders, slag, and battery casing chips. Widespread lead-, cadmium-, and nickel-contaminated soils were found to be present on site. The highest lead and cadmium concentrations (49,000 mg/kg and 2,400 mg/kg, respectively) and second highest nickel concentration (41,000 mg/kg) were detected in a 0-0.5-foot sample collected on the northwest corner of the site. The highest nickel concentration (42,000J mg/kg) was detected in a 0-0.5-foot sample collected on the south portion of the site. In addition, lead and nickel concentrations up to 160,000 mg/kg and 120,000J mg/kg, respectively, were detected in samples collected from several waste piles. Toxicity Characteristic Leaching Procedure (TCLP) testing on selected samples resulted in maximum lead and cadmium concentrations of 276 mg/L and 59.7 mg/L, respectively. The report concluded that in general the total lead, cadmium, and nickel concentrations decreased with depth except in areas of buried battery casing chips or other buried waste material (Metcalf & Eddy, 1994).

Eight existing on-site monitoring wells were sampled in October 1993 (Metcalf & Eddy, 1994). Lead was detected in three samples at concentrations ranging from 1.2 μg/L to 33 μg/L. Other metals were detected in the monitoring well samples but not at elevated concentrations. The highest concentration was observed in the monitoring well located on the northwest corner of the site. Total 1,2-dichloroethylene (DCE) was detected in three wells at concentrations ranging from 10 to 460 μg/L. The highest concentration of total 1,2-DCE was observed in the sample collected from the monitoring well completed on the northeast corner of the site. Trichloroethylene (TCE) was also detected (190 μg/L) in the sample collected from the well on the northeast corner of the site. No other VOCs were detected in the monitoring well samples (Metcalf & Eddy, 1994).

An August 1994 reconnaissance of the PAL site by EPA and E & E/Technical Assistance Team (TAT) showed 19 of the 27 SWMUs consisting of primarily the containerized liquid and containerized or piled solid materials staged in various areas, had been removed from the site (E & E, 1994). However, the reconnaissance trip report indicated that no soil removal had taken place at the site to date.

The Administrative Order of Consent (AOC) and included final closure plan was agreed to by EPA and PAL in June 1995 (EPA, 1995a). The November 1996 final report for the closure of the PAL site detailed the completed closure activities conducted (Versar, 1996). Initially 50-foot by 50-foot grids were established across the site and sampled to a depth of 1-foot to determine whether a particular grid of soil required stabilization, cover, or no further action. Lead-, cadmium-, and nickel-contaminated soils with concentrations equal to or exceeding 1,000 mg/kg, 510 mg/kg, and 14,000 mg/kg, respectively, were first covered with a geotextile fabric and then compacted crushed stone. Those soil grids with TCLP results equal to or exceeding lead, cadmium, or nickel concentrations of 5.0 mg/L, 1.0 mg/L, and 40 mg/L, respectively, were excavated for stabilization in a berm (Vesar, 1996). Results of the grid sampling required the excavation and on-site stabilization (with bentonite and portland cement) of 7,039 tons of lead-, cadmium-, and nickel-contaminated soil within a generally north-south trending berm located on the eastern portion of the site (Vesar, 1996). The soil excavation was limited to 1-foot BGS in all grids except in the areas of buried battery casing chips, which were excavated to a maximum depth of 3.5 feet BGS. The berm of stabilized soil was overlain successively by sand, geotextile fabric and topsoil.

Seven existing monitoring wells located on site were properly abandoned, and three new water table monitoring wells were installed on the northwest, south and east sides of the site. According to the closure plan, these monitoring wells would be sampled for a period of 10 years, after which time they would be properly abandoned if no statistical increase in lead, cadmium, or nickel concentrations are observed in samples periodically collected from the wells. A May 22, 1997 letter from EPA to PAL acknowledged completion of the AOC (EPA, 1997).



PASL.CDR

Figure 2-1: Site Location Map

Source: USGS 7.5 minute series,
Andalusia, ILL-IA Quad., 1991
Milan, ILL-IA Quad., 1992
Davenport West, IA Quad., 1991
Davenport East, IA Quad., 1991

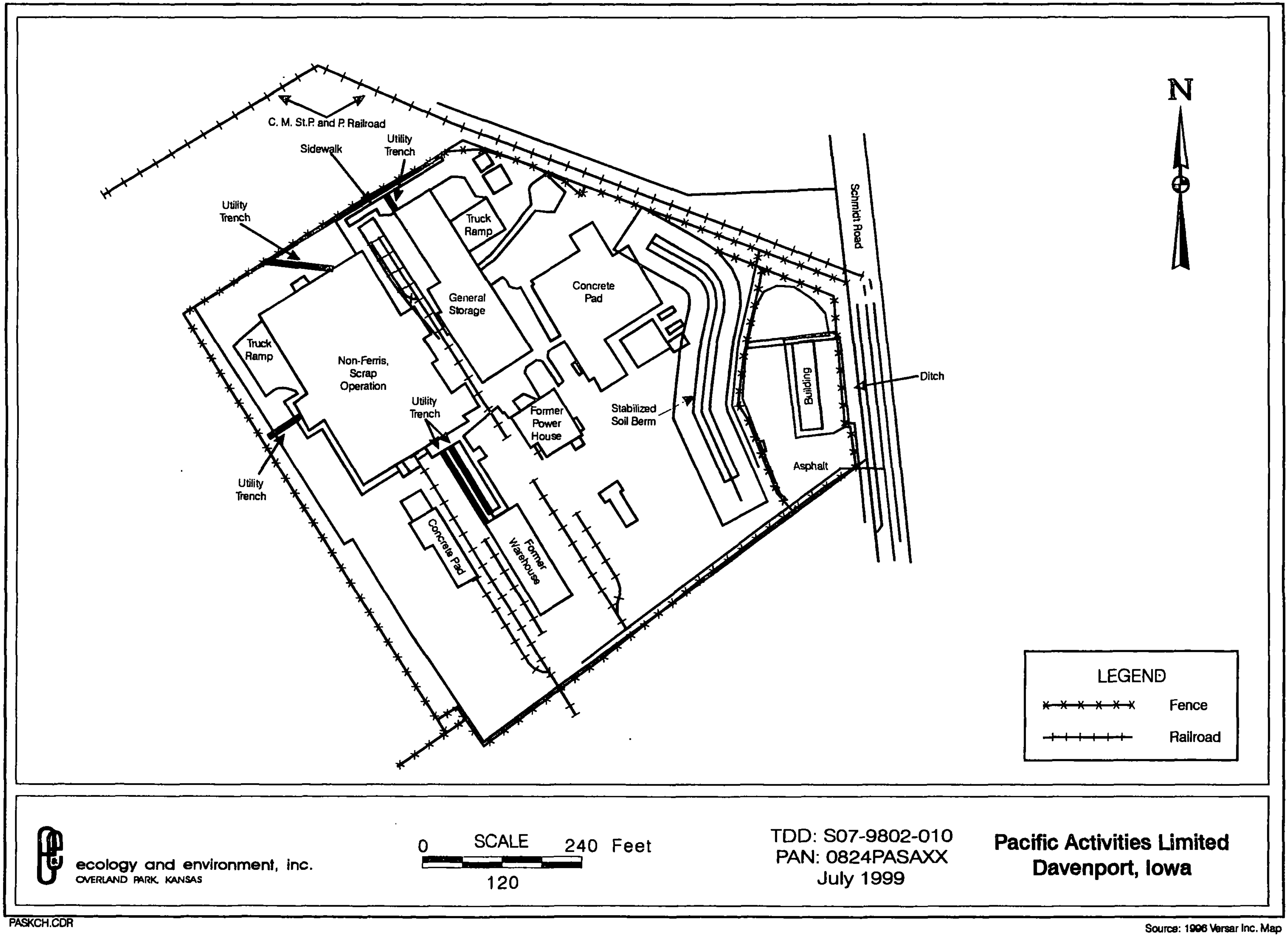


Figure 2-2: Site Area Map

3.0 SOURCE CHARACTERIZATION

According to the November 1996 final report for the closure of the PAL site, soils contaminated with lead, cadmium, and nickel were only removed (except in areas not underlain by the battery casing chips) to a depth of 1.0-foot BGS (Vesar, 1996). Based on the analytical results of the soil sampling conducted during the followup investigation associated with the 1991 RFA, metals contamination extended below 1.0-foot BGS in several areas (Metcalf & Eddy, 1994). The highest lead concentration (48,000 mg/kg) observed in soil collected below 1.0-foot BGS was from a boring on the northwest portion of the site. The highest cadmium concentration (26,000 J mg/kg) observed in soil collected below 1.0-foot BGS was from a boring on the north portion of the site (Metcalf & Eddy, 1994). The highest nickel concentration (28,000 mg/kg) observed in soil collected below 1.0-foot BGS was from a boring near the center of the site. No soil samples have been collected at the site and submitted for VOC analysis (other than for BTEX and total hydrocarbons). Therefore, it is unknown whether the VOCs, including 1,2-DCE and TCE, are attributable to the site.

In general, widespread elevated concentrations of lead, cadmium, and nickel remain present in soils below 1.0-foot BGS over the majority of the 10.3 acre site, especially on the north and northwest portions of the site. Although no specific background samples were collected for comparison to the analytical results from on-site samples, analytical results from selected borings show concentrations of lead, cadmium, and nickel below 100 mg/kg for all three analytes in samples collected below 1.0-foot BGS in limited areas on site. Concentrations of lead, cadmium, and nickel exceeding three times 100 mg/kg have been documented in on-site soils at depths greater than 1-foot (Metcalf & Eddy, 1994).

The BTEX-contaminated soil remaining in the subsurface on site is not included in the source characterization because it is related to the release of gasoline from the former USTs. Therefore, this contamination is subject to the Petroleum Exclusion under CERCLA.

4.0 GROUND WATER PATHWAY

4.1 GEOLOGICAL SETTING

The U.S. Department of Agriculture classified the soil in the area of the site as urban land situated nearly level bottom land and nearly level to gently sloping uplands and terraces. This soil unit is further defined as being covered by streets, parking lots, buildings and other structures that obscure and alter the soils; many structures are built on fill material. Most areas are drained by sewer systems, gutters and drainage tile (USDA, 1996). Well logs for the monitoring wells installed on site show the lithology of the unconsolidated material at the site are primarily clays, silty clays, and sandy silts (Dahl, 1993). These unconsolidated materials are approximately 8.5 feet to 16 feet thick in the site area.

The uppermost bedrock units in the vicinity of the site consist of primarily dolomites and limestones of the lower Devonian and Silurian systems (Horick, 1984; Wahl, et. al, 1978). In descending order these formations are the Devonian-age Wapsipinicon Limestone, and the Silurian-aged Gower Dolomite, Hopkinton Dolomite, Kankakee Limestone, and Edgewood Dolomite. This system forms a major bedrock aquifer, and has an approximate thickness of 200 feet (see Figure 4-1: General Geologic/Hydrogeologic Column) (Horick, 1984).

Underlying the Silurian system are Ordovician-age shales, dolomites and limestones. The uppermost units (Maquoketa Shale, Galena Dolomite, Decorah Formation, and Platteville Formation) form a confining layer between the Silurian aquifer and the deeper Cambrian-Ordovician aquifer. The lower units of the Ordovician System present in the site area, the St. Peter Sandstone and the Prairie du Chien Formation, form the upper part of the Cambrian-Ordovician aquifer (Wahl, et. al, 1978). The entire Ordovician-age sequence of bedrock units in this area is approximately 930 feet thick (Kay and Lees, 1912).

Underlying the Ordovician system are Cambrian-age sandstones, dolomites and shales. The Jordan Sandstone and St. Lawrence Dolomite form the lower portion of the Cambrian-Ordovician aquifer (see Figure 4-1). The Franconia Sandstone (which consists of shale, siltstone, and sandstone) forms a confining unit. Underlying the Franconia Sandstone confining unit is the Cambrian-age Dresbach Group consisting of sandstones, shales and dolomites. The Dresbach Group forms the lowermost aquifer in the site area. The Cambrian System is of varying thickness across Scott County, but is likely greater than 1,000 feet in the site area (Wahl, et. al, 1978).

The Cambrian-age rocks overlie basement rock of the Precambrian age (Figure 3-1). The Precambrian-age bedrock consists of crystalline igneous and metamorphic rocks of unknown thickness (Wahl, et. al, 1978).

4.2 HYDROGEOLOGIC SETTING

Surficial and bedrock aquifers are encountered in the site area. The surficial aquifer generally consists of alluvial deposits, buried-channel deposits or permeable zones within the residuum (Wahl, et. al, 1978). Based on the close proximity of the Mississippi River to the south of the site, it is likely that the shallow ground water flow direction in the site area is towards the river. Well yields from the alluvial aquifer near the river can range from 500 to 1000 gallons per minute (gpm) (Wahl, et. al, 1978). Based fine-grained lithology indicated on monitoring well logs, and the shallow depth to bedrock, a significant surficial aquifer is absent at the site. According to water level data obtained from on-site monitoring wells in 1992 the shallow ground water flow direction beneath the site is southeast towards the Mississippi River (DAHL, 1993). Static water levels in the on-site monitoring wells ranged from 4.94 feet to 6.54 feet BGS (DAHL, 1993).

The first bedrock aquifer (and first aquifer encountered at the site) is the Devonian-Silurian aquifer. The regional ground water flow in this aquifer is generally southeast. Possible well yields for the Silurian aquifer range from 100 to 300 gpm (Wahl, et. al, 1978). The ground water flow in the underlying Cambrian-Ordovician aquifer was naturally southeastward. However, due to extensive water withdrawal in the major urban area of Davenport, flow in the Cambrian-Ordovician aquifer is currently to the east (Wahl, et. al, 1978). Possible well yields from that aquifer range from 250 to 500 gpm. Due to the paucity of wells completed into the Dresbach aquifer, a ground water flow direction in that aquifer can not been estimated (Wahl, et. al, 1978).

4.3 GROUND WATER USE AND TARGETS

According to well records on file with Iowa Department of Natural Resources Geological Survey Bureau, seven private wells, all completed into the Silurian-Devonian aquifer, are known to exist within 2 to 4 miles of the site (Vandorp, 1998). Four of the seven wells are located in a residential area (mobile home park) approximately 3.5 miles west of the site (see Figure 4-2: 4-Mile Radius Map). The average number of people per household in Scott County is 2.58; therefore, an estimated 18 people use private wells for drinking water purposes from the aquifer. In addition, several wells located within a 4-mile radius of the site are used for commercial/industrial/agricultural purposes. No active municipal water wells are located within a 4-mile radius of the site of the PAL site (Moore, 1998). Municipal water for Davenport is supplied by surface water intakes along the Mississippi River.

4.4 GROUND WATER PATHWAY CONCLUSIONS

No analytical data are available for drinking water supplies near the PAL site. The analytical data from the monitoring wells existing on-site at the time of the 1993 RFA sampling indicated that the metals contamination had not migrated to ground water with the possible exception of the northwest corner of the site. A total lead concentration of 33 μg/L was detected in a sample collected from a monitoring well formerly located on the northwest corner of the site (Metcalf & Eddy, 1994). However, lead was not detected at significantly elevated concentrations in the other seven monitoring wells installed at various locations across the site. In addition, no background wells were installed upgradient of the site, which as stated earlier is located in an industrial area, to document that the elevated concentration of lead is the result of a release from on-site contaminated-soil source(s). During the 1993 RFA-associated sampling, TCE and total 1,2-DCE were detected at concentrations of 190 μg/L and 460 μg/L, respectively, in a monitoring well formerly located at the northeast corner of the site (Metcalf & Eddy, 1994). 1,2-DCE was also detected at a concentration of 120 μg/L in a monitoring well located in the center of the site. No soil samples were collected for VOC analysis to document an on-site source area for these chlorinated-solvent contaminants. In addition, no background wells located upgradient of the site have been installed and sampled in order to attribute the VOC contamination to the site. It appears that limited contamination of ground water exists at the site, but because no background sampling has been conducted it can not be ascertained if the contamination is the result of a on-site release of contamination.

The human health and environmental threat via ground water is low because it is only used for domestic purposes by approximately 18 people within a 4-mile radius of the PAL site. In addition, the nearest drinking water well is located 2.3 miles from the site. The primary source of water for the Davenport area is the Mississippi River, the surface water intake for which is located approximately 1 mile upstream of the site (Vandorp, 1998).

SYSTEM	ROCK UNIT	SECTION	THICKNESS (Feet)	GENERAL LITHOLOGY	HYDROLOGY
QUATERNARY			8.5-16	UNCONSOLIDATED MATERIALS	
DEVONIAN	WAPSIPINICON LIMESTONE		90	DOLOMITE, LIMESTONE & SHALE	*AQUIFER*
SILURIAN	GOWER DOLOMITE		200	DOLOMITE WITH SOME CHERT AND LIMESTONE	
	HOPKINTON DOLOMITE				
	KANKAKEE LIMESTONE				
	EDGEWOOD DOLOMITE				
ORDOVICIAN	MAQUOKETA SHALE		930	DOLOMITE, LIMESTONE, SHALE AND CHERT	*ORDOVICIAN CONFINING BEDS*
	GALENA DOLOMITE				
	DECORAH FORMATION				
	PLATTEVILLE FORMATION				
	ST. PETER SANDSTONE			SANDSTONE, DOLOMITE AND SHALE	*CAMBRIAN-ORDOVICIAN AQUIFER*
	PRAIRIE DU CHIEN FORMATION				
CAMBRIAN	JORDAN SANDSTONE		>1000	SANDSTONE AND DOLOMITE	
	ST. LAWRENCE DOLOMITE				
	FRANCONIA SANDSTONE			SHALE, SILTSTONE & SANDSTONE	CAMBRIAN CONFINING BEDS
	DRESBACH GROUP			SANDSTONE, SHALE & DOLOMITE	DRESBACH AQUIFER
PRECAMBRIAN	UNDIFFERENTIATED		UNKNOWN	CRYSTALLINE IGNEOUS & METAMORPHIC	

KEY

- Shale or Clays
- Sandstone or Sands
- Limestone
- Sand and Gravel
- Dolomite
- Crystalline Basement

ecology and environment, inc.

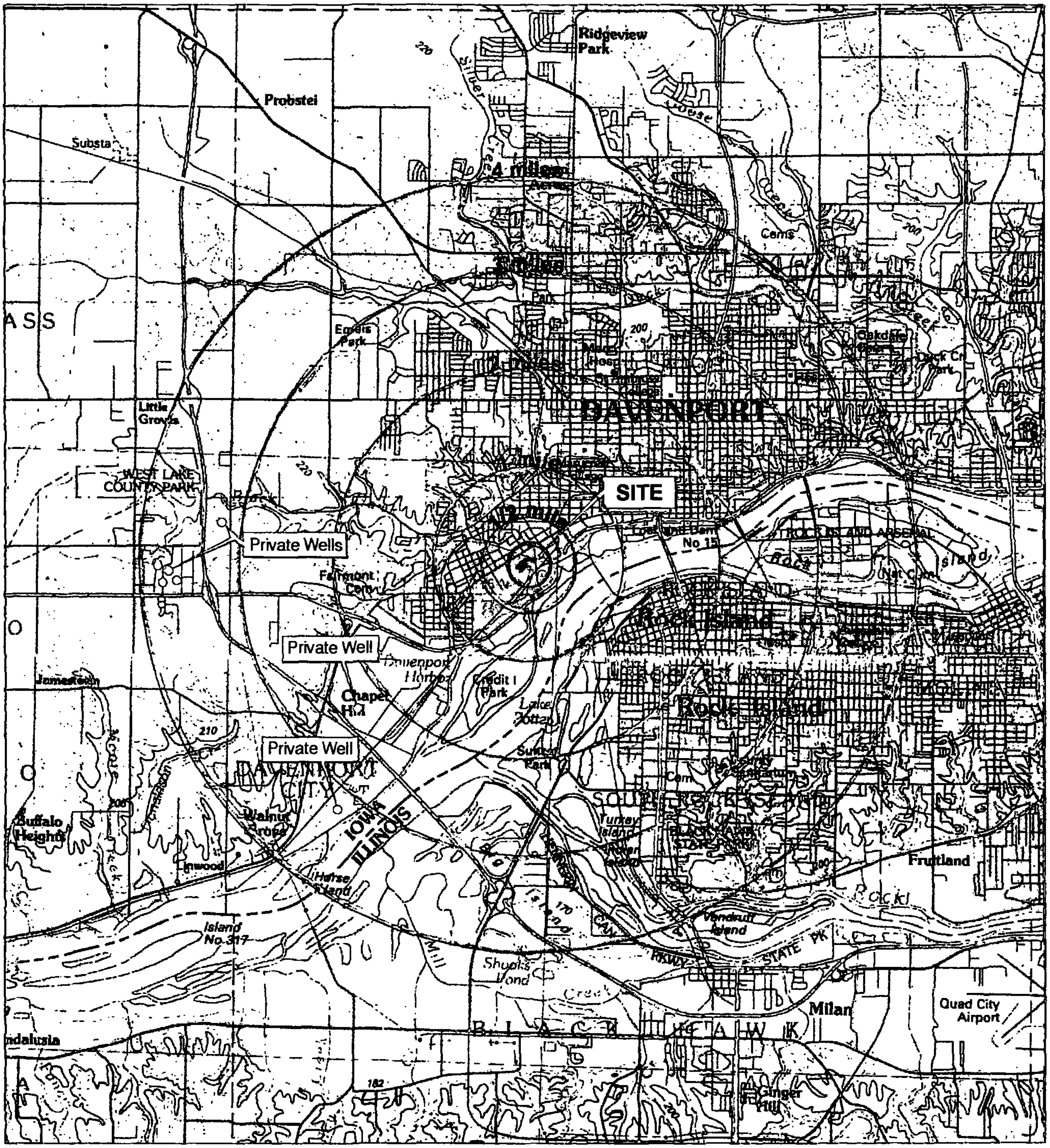
Pacific Activities Limited
Davenport, Iowa

TDD: S07-9802-010
PAN: 0824PASAXX
Prepared by Brooke Barron
July 1999

PALSTRAT.CDR

Sources: IGS, 1912; IGS, 1978.

Figure 4-1: General Geologic / Hydrogeologic Column



SCALE

0 2 4 MILE

N

Pacific Activities Limited
Davenport, Iowa

TDD: S07-9802-010
PAN: 0824PASAXX
Prepared by B. Barron
July 1999

ecology and environment, inc.
OVERLAND PARK, KANSAS

PAL4ML.CDR

Source: USGS 30x60 minute series, 1984, Davenport, IA-Ill. Quad.

Figure 4-2: 4-Mile Radius Map

5.0 SURFACE WATER PATHWAY

5.1 HYDROLOGICAL SETTING

The topography of the site is generally flat-lying with a gentle slope to the west. Although the north portion of the site is not within a floodplain, the south portion of the PAL site is in the 500-year floodplain of the Mississippi River (Uhde, 1998). The site is connected to the municipal storm sewer system, and most surface drainage from the site would be carried by this storm sewer system and discharged into the Mississippi River located approximately 1,500 feet southeast of the site. No information was available as to the discharge point for storm sewer water but drainage ditches present across the site, and at the perimeter, converge and eventually flow from the site to the south (Versar, 1996). Based on the drainage plan map in the Versar final report, only minimal amounts of surface water would escape capture by the drainage ditches. The Mississippi River flows in a northeast-to-southwestern direction and is a registered fishery. Major streams in Scott County flow from a northwest-to-southeast direction. The 15-mile downstream target distance limit (TDL) is illustrated on Figure 5-1.

5.2 SURFACE WATER USE AND TARGETS

The water intakes for Davenport/Bettendorf, Iowa, and Rock Island/Moline, Illinois, are located on the Mississippi River, upstream of the site (Udhe, 1998). According to American Water Works, the nearest downstream drinking water intake on the Mississippi River is approximately 79 miles downstream (Udhe, 1998).

Several species of fish are commonly caught for human consumption on the Mississippi River. Sport fish found at this location on the Mississippi River include carp, buffalo, channel catfish, white bass, walleye, sauger, crappie, bluegill, largemouth bass, freshwater drum, carp, and flathead catfish. Commercial fish found in the area include channel catfish, carp, and buffalo (Wilson, 1998).

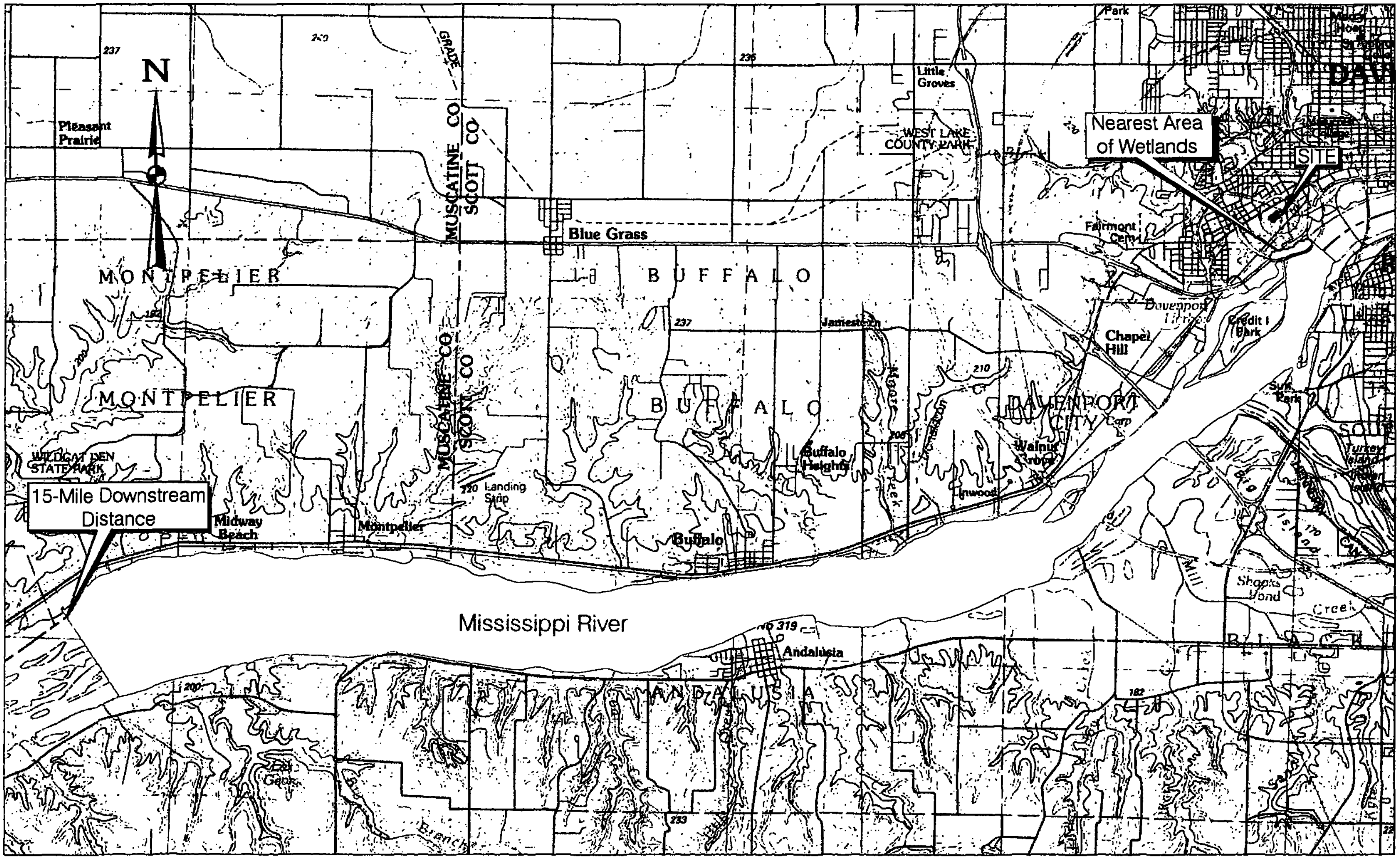
The IDNR conducted a file search to identify state and federal rare, threatened, and endangered species that may be in the site area (Wilson, 1998). The results of the search revealed that five species of freshwater mussel that occur in the Mississippi River are either threatened or endangered. The pink mucket (*Lampsilis higginsii*, federally threatened), squawfoot (*Strophitus undulatus*), spectale case (*Cumberlandia monodonta*) and pistol grip (*Tritogonia verrucosa*) are all state-listed endangered species. The butterfly (*Ellipsaria lineolata*) is a state-listed threatened species.

National wetlands inventory maps indicate that numerous palustrine, forested, broad-leaved deciduous wetlands are located within the 15-mile TDL along the Mississippi River (USDI, 1988). The closest wetland to the site in a downslope (west) direction from the site is located approximately 1,700 feet (Figure 5-1).

5.3 SURFACE WATER CONCLUSIONS

No analytical data are available to evaluate a potential release to the surface water pathway near the PAL site. However, the threat of a release to the surface water via overland flow has been minimized by the removal action undertaken at the site that provided for excavation and stabilization or capping of the majority of the contaminated on-site surface (0- to 1-foot) soils. No data were collected to evaluate a potential surface water to ground water interaction. But, the Mississippi River is approximately 1,500 feet south of the site, and only minimal concentrations of metals were detected in the monitoring wells installed on site. Metals are also generally not highly mobile in most ground water settings.

It would be problematic to attribute contamination associated with on-site activities to a past release to the surface water pathway because of the numerous industrial activities occurring along the Mississippi River in the Davenport area, and the diversion of most surface water from the site and other industrial facilities into the municipal storm sewer system. In addition, the large volume of water flowing in the Mississippi River would likely have provided a substantial dilution of any contaminants released from the site into the river. That dilution factor would likely minimize the threat to wetlands, fish populations, and endangered or threatened species. The threat to human populations via a potential past release is minimal because the water intakes for Davenport/Bettendorf, Iowa, and Rock Island/Moline, Illinois, are located upstream of the site, and the nearest downstream surface water intake is located approximately 79 miles from the site.



ecology and environment, inc.
OVERLAND PARK, KANSAS

SCALE 0 2 4 MILE

TDD: S07-9802-010
PAN: 0824PASAXX
December 1998

Pacific Activities Limited
Davenport, Iowa

PA15MIL.CDR

Source: USGS 30x60 minute series, 1984, Davenport, IA-ILL. Topo.

Figure 5-1: 15-Mile Downstream Distance Map

6.0 SOIL AND AIR EXPOSURE PATHWAYS

6.1 PHYSICAL CONDITIONS

According to documents in the EPA file, since PAL purchased the site on March 15, 1989, it has not conducted operations at the site. The city of Davenport recycling program utilized the southeast portion of the site until March 31, 1995, when the recycling facility was closed and public access was eliminated. Based on a future use map in the Versar final report, subsequent to the PRP-lead closure of the site five buildings remain for use by PAL for warehousing, equipment parking, operations, and maintenance (Versar, 1996). In addition, the majority of the site is overlain by either concrete, gravel, and asphalt, with some remaining smaller areas of exposed soil. The entire site property is encircled with a fence, and a locked gate is the only means of entrance to the site.

6.2 SOIL AND AIR TARGETS

As of 1996, there were no workers present on the site property. The total population within 4 miles of the project area, as determined by the Geographical Exposure Modeling System (GEMS) with 1990 Census data, is 87,157 (GEMS, 1990). Approximately 9,195 persons reside within a 1-mile radius of the site (GEMS, 1990). Van Buren Park is located approximately 500 north of the site. No schools or daycare facilities are located within 200 feet of the site. The nearest occupied residence is located approximately 400 feet north of the site, and other residences lies farther to the north (USGS, 1991; EPA, 1995b). Industrial property borders the site to the south, east and west.

6.3 SOIL AND AIR PATHWAY CONCLUSIONS

The lead action level (1000 mg/kg) exceeds the EPA Region 3 Risk-Based Concentration (RBC) of 400 mg/kg. Therefore, soils for that required no further action during the site closure activities but which have lead concentrations exceeding the EPA Region 3 RBCs exist on site. According to the grid sampling conducted to determine the final resolution of each grid thirteen 50-foot by 50-foot grids had elevated lead levels above 400 mg/kg, but which required no further action under the closure plan. Therefore, the total area of potentially contaminated soil at concentrations exceeding the Region 3 RBC is 32,500 square feet. Concentrations in these grids ranged from 410 to 840 mg/kg. The remaining grids were covered either with a geotextile fabric and compacted stone, or backfilled with compacted stone and are considered impervious to direct exposure. Because there are were no workers on site as of 1996, access to the site is limited, and the area is in a primarily industrial area with a limited surrounding population, the threat presented by the remaining on-site metals contamination via soil exposure is considered low.

No air samples were collected to evaluate the risk via the air pathway. But the lack of on-site residents or workers and capping or stabilization of the majority of soil contamination on site indicates that the risk via the air pathway is probably low.

7.0 SUMMARY AND CONCLUSIONS

The PAL site is located at 626 Schmidt Road in Davenport, Scott County, Iowa. The approximately 10.3 acre site is located in an industrial area adjacent to the Mississippi River. Davenport-Bessler Corporation operated a diesel locomotive manufacturing facility at the site from 1938 to 1954. A.G.S Associates, an Iowa general partnership, owned the site from 1954 to 1964. During part of that time, the site was leased to Alter Company, an Iowa corporation. Alter Company operated a scrap metal processing and alloy metal production/fabrication business during the period of the lease. In 1964, Sherman Industries, Inc., purchased the site and leased the property to Alloy Metal Products, Inc. (AMPI). AMPI, which produced secondary nickel alloy additives was in operation until 1987, when it entered bankruptcy. PAL purchased the property in May 1989, but as of 1996 had not utilized the facility. Public access to the site has been restricted by a fence with locked gate.

In October 1990, two underground storage tanks (USTs) were removed from the site, and approximately 90 cubic yards of contaminated soil were excavated and disposed of at the Scott County landfill. A RCRA facility assessment (RFA) was prepared in July 1991, which identified 27 solid waste management units (SMUs) requiring corrective action under RCRA. A detailed sampling investigation (associated with RFA) conducted in October 1993 determined that widespread lead-, cadmium-, and nickel-contaminated soil was present in on-site soils. An August 1994 reconnaissance of the PAL site by EPA and E & E/TAT showed 19 of the 27 SWMUs consisting of primarily the containerized liquid and containerized or piled solid materials staged in various areas, had been removed from the site. However, the reconnaissance trip report indicated that no soil removal had taken place at the site to date. An AOC and associated closure plan was agreed upon by EPA and PAL in 1995.

The closure plan incorporated soil sampling within a 50-foot by 50-foot grid system to determine the action for each grid based on the agreed to action levels for total and TCLP lead, cadmium, and nickel. Results of the grid sampling required the excavation and on-site stabilization (with bentonite and portland cement) of 7,039 tons of lead-, cadmium-, and nickel-contaminated soil within a generally north-south trending berm located on the eastern portion of the site (Vesar, 1996). The soil excavation was limited to 1.0-foot BGS in all grids except in the areas of buried battery casing chips, which were excavated to a maximum depth of 3.5 feet BGS. Selected grids required coverage with geotextile fabric and stone, and other grids required no further action. Seven existing monitoring wells located on site were properly abandoned, and three new water table monitoring wells were installed on the northwest, south and east sides of the site. According to the closure plan, these monitoring well would be sampled for a period of

10 years, after which time they would be properly abandoned if no increase in lead, cadmium, or nickel are observed in samples collected from the wells. A May 22, 1997, letter from EPA to PAL acknowledged completion of the AOC.

In general, widespread elevated concentrations of lead, cadmium, and nickel remain present in soils below 1.0-foot BGS over the majority of the site, especially on the north and northwest portions of the site. Although no specific background samples were collected for comparison to the analytical results from on-site samples, analytical results from selected borings show concentrations of lead, cadmium, and nickel below 100 mg/kg for all three analytes in samples collected below 1.0-foot BGS in limited areas on site. Concentrations of lead, cadmium, and nickel exceeding three times 100 mg/kg have been documented in on-site soils at depths greater than 1.0-foot BGS.

The analytical data from the monitoring wells existing on-site at the time of the 1993 RFA sampling indicated that the metals contamination had not migrated to ground water with the possible exception of northwest corner of the site. A lead concentration of 33 μg/L was detected in a sample collected from a monitoring well formerly located on the northwest corner of the site (Metcalf & Eddy, 1994). However, lead was not detected at significantly elevated concentrations in the other seven monitoring wells installed at various locations across the site. In addition, no background wells were installed upgradient of the site (which as stated earlier is located in an industrial area) to document that the elevated concentration of lead in MW-5 is the result of release from on-site contaminated-soil source(s). During the 1993 RFA-associated sampling, TCE and total 1,2-DCE were detected at concentrations of 190 μg/L and 460 μg/L, respectively, in a monitoring well formerly located at the northeast corner of the site (Metcalf & Eddy, 1994). 1,2-DCE was also detected at a concentration of 120 μg/L in a monitoring well located in the center of the site. No soil samples were collected for VOC analysis to document an on-site source area for these chlorinated-solvent contaminants. In addition, no background wells located upgradient of the site have been installed and sampled in order to attribute the VOC contamination to the site. Based on the available data it appears that limited contamination of ground water exists at the site, but because no background sampling has been conducted it can not be ascertained if the contamination is the result of a on-site release of contamination.

Although no analytical data are available for drinking water supplies near the PAL site, the human health and environmental threat via ground water is low because it is only used for domestic purposes by approximately 18 people within a 4-mile radius of the PAL site and the nearest drinking water well is 2.3 miles from the site. The primary source of water for the Davenport area is the Mississippi River, the surface water intake for which is located approximately 1 mile upstream of the site (Vandorp, 1998).

No analytical data are available to evaluate a potential release to the surface water pathway near the PAL site. However, the threat of a release to the surface water via overland flow has been minimized by the removal action undertaken at the site that provided for excavation of contaminated on-site surface (0- to 1-foot) soils and replacement with clean material. No data were collected to evaluate a potential surface water to ground water interaction. But, the Mississippi River is approximately 1,500 feet south of the site, and only minimal concentrations of metals were detected in the monitoring wells installed on site. Metals are also generally not highly mobile in most ground water settings.

It would be problematic to attribute contamination associated with on-site activities to a past release to the surface water pathway because of the numerous industrial activities occurring along the Mississippi River and specifically in this area of Davenport. In addition, the large volume of water flowing in the Mississippi River would likely have provided a substantial dilution of any contaminants released from the site into the river. That dilution factor would likely minimize the threat to wetlands, fish populations, and endangered or threatened species. The threat to human populations via a potential past release is minimal because the water intakes for Davenport/Bettendorf, Iowa, and Rock Island/Moline, Illinois, are located upstream of the site, and the nearest downstream surface water intake is located approximately 79 miles from the site.

Although closure activities at the site addressed surface soil contamination, the site-specific lead action level (1,000 mg/kg) exceeds the EPA Region 3 Risk-Based Concentration (RBC) of 400 mg/kg. Therefore, soils for that required no further action during the site closure activities but which have lead concentrations exceeding the Region 3 RBC exist on site. According to the grid sampling conducted to determine the final resolution of each grid thirteen 50-foot by 50-foot grids had elevated lead levels above 400 mg/kg, but which required no further action under the closure plan. Therefore, the total are of potentially contaminated soil at concentrations exceeding the Region 3 RBC is 32,500 square feet. Concentrations in these grids ranged from 410 to 840 mg/kg. The remaining grids were covered either with a geotextile fabric and compacted stone, or backfilled with compacted stone and are considered impervious to direct exposure. Because there are were no workers on site as of 1996, access to the site is restricted, and the site is in a primarily industrial area with a limited surrounding residential population, the threat presented by the remaining on-site metals contamination via soil exposure is considered low.

No air samples were collected to evaluate the risk via the air pathway. But the lack of on-site workers, minimal surrounding residential population and cover or stabilization of the majority of contamination on site indicates the risk via the air pathway is probably low.

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